## CLAIMS

1. A double-stranded oligonucleotide made up of two strands of 19 to 23 nucleotides, each strand consisting, from 5′ to 3′, of a sequence of 17 to 21 ribonucleotides and two deoxyribo- or ribonucleotides, the 17 to 21 ribonucleotide RNA sequences of said strands being complementary and the two nucleotides of the 3′ ends being protruding, characterized in that the RNA sequence of the sense strand or positive strand is that of a fragment of a transcript of an α, α′ or β subunit of a CK2 protein kinase, selected from the group consisting of:

a) a fragment corresponding to an oligonucleotide which inhibits more than 80% of the expression of the corresponding subunit, in cell culture, at a concentration of between 1 and 200 nM, preferably less than 20 nM,

b) a fragment of a transcript of an α subunit included between positions 18-74, 259-279, 565-585, 644-664, 720-750, 808-831 and 863-885, from the ATG codon, with reference to the cDNA sequence of the CK2 α subunit of mouse No. NM_007787 or human No. NM_001895,

c) a fragment of a transcript of an α′ subunit included between positions 49-69, 132-142, 306-326, 367-387, 427-447, 451-471, 595-615, 735-755, 827-847, 868-888, 949-969 and 988-1008, from the ATG codon, with reference to the cDNA sequence of the CK2 α′ subunit of mouse NM_009974 or human No. NM_001896,

d) a fragment of a transcript of a β subunit included between positions 80-100, 116-127, 164-208, 369-389, 400-420, 527-591 and 613-643, from the ATG codon, with reference to the cDNA sequence of the CK2 β subunit of human No. NM_001320 or of mouse No. NP_034105, and

e) a fragment of 17 to 21 bases exhibiting at least 80% identity with the fragments defined in a), b), c) and d).

2. The double-stranded oligonucleotide as claimed in claim 1, characterized in that said sequence is selected from the group consisting of:

a) a fragment of an α subunit defined by the RNA equivalent of the sequence SEQ ID Nos: 1 to 13,

b) a fragment of an α' subunit defined by the RNA equivalent of the sequence SEQ ID Nos: 14 to 25,

c) a fragment of a β subunit defined by the RNA equivalent of the sequence SEQ ID Nos: 26 to 40, and

d) a sequence as defined in a), b) or c), truncated by one or two nucleotides at its 5' and/or 3' end.

3. The double-stranded oligonucleotide as claimed in claim 1 or claim 2, characterized in that each of the strands comprises a phosphate group in the 5' position and a hydroxyl group in the 3' position.

4. The double-stranded oligonucleotide as claimed in any one of claims 1 to 3, characterized in that said protruding nucleotides of the 3' ends are selected from the group consisting of the pairs tt and aa.

5. The double-stranded oligonucleotide as claimed in any one of claims 1 to 4, characterized in that it is made up of two strands of 19 or 20 nucleotides.

6. The double-stranded oligonucleotide as claimed in claim 5, characterized in that the sense strand is defined by the sequence SEQ ID No. 67 or 68.

7. The double-stranded oligonucleotide as claimed in any one of claims 1 to 4, characterized in that it is made up of two strands of 21 to 23 nucleotides.

8. The double-stranded oligonucleotide as claimed in claim 7, characterized in that the sense strand is defined by the sequence SEQ ID Nos. 41 to 66, 69 to 81, 83 and 86.

9. A single-stranded oligonucleotide, characterized in that it is defined by the antisense strand or negative strand of the double-stranded oligonucleotide as claimed in any one of claims 1 to 8.

10. The oligonucleotide as claimed in any one of claims 1 to 9, characterized in that it is stabilized.

11. A precursor of the oligonucleotide as claimed in any one of claims 1 to 10, characterized in that it is selected from the group consisting of:

a) a single-stranded oligonucleotide corresponding to the sense or antisense strand of the oligonucleotide as claimed in any one of claims 1 to 10,

b) a double-stranded oligodeoxynucleotide corresponding to the sense and/or antisense strands of the oligonucleotide as claimed in any one of claims 1 to 10,

c) a hairpin oligoribonucleotide comprising the sequences of the sense and antisense strands of the double-stranded oligonucleotide as claimed in any one of claims 1 to 8 and 10,

d) a double-stranded oligodeoxynucleotide made up of a sense strand corresponding to the oligonucleotide defined in c) and of an antisense strand complementary thereto.

12. An expression cassette, characterized in that it comprises at least one precursor as defined in claim 11, under the control of appropriate transcriptional regulatory elements.

13. An expression vector, characterized in that it comprises the cassette as defined in claim 12.

14. The expression vector as claimed in claim 13, characterized in that it is a DNA vector comprising a DNA precursor as defined in b) and d) of claim 11 included in an expression cassette.

15. A eukaryotic or prokaryotic cell, characterized in that it is modified with an oligonucleotide as claimed in any one of claims 1 to 10, a precursor as claimed in claim 11, an expression cassette as claimed in claim 12 or an expression vector as claimed in claim 13 or claim 14.

16. A transgenic nonhuman animal, characterized in that it comprises cells modified with a precursor as claimed in claim 11, an expression cassette as claimed in claim 12 or an expression vector as claimed in claim 13 or claim 14.

17. A pharmaceutical composition, characterized in that it comprises at least one oligonucleotide as claimed in any one of claims 1 to 10, one precursor as claimed in claim 11 or one expression vector as claimed in claim 13 or claim 14, and a pharmaceutically acceptable carrier.

18. The pharmaceutical composition as claimed in claim 17, characterized in that said oligonucleotide, precursor or vector is associated with at least one substance that makes it possible to cross the plasma membrane.

19. The pharmaceutical composition as claimed in claim 17 or claim 18, characterized in that said oligonucleotide, precursor or vector is associated with at least one substance that allows targeting into cells, tissues or organs.

20. The pharmaceutical composition as claimed in any one of claims 17 to 19, characterized in that said oligonucleotide, precursor or vector is combined with at least one antiviral or anticancer agent.

21. The pharmaceutical composition as claimed in any one of claims 17 to 20, characterized in that it comprises a mixture of several oligonucleotides or of their precursors, or else one or more expression vectors for said mixture of oligonucleotides, in particular a mixture comprising at least one oligonucleotide specific for the $\alpha$ subunit, at least one oligonucleotide specific for the $\alpha'$ subunit and at least one oligonucleotide specific for the $\beta$ subunit.

22. The use of an oligonucleotide as claimed in any one of claims 1 to 10, of a precursor as claimed in claim 11 or of an expression vector as claimed in claim 13 or claim 14, for preparing a medicinal product for use in the prevention and/or treatment of cancer.

23. The use of an oligonucleotide as claimed in any one of claims 1 to 10, of a precursor as claimed in claim 11 or of an expression vector as claimed in claim 13 or claim 14, for preparing a medicinal product for use in the prevention and/or treatment of viral diseases.

24. A product containing at least one oligonucleotide as claimed in any one of claims 1 to 10, one precursor as claimed in claim 11 or one expression vector as claimed in claim 13 or claim 14 and an anticancer

active ingredient, as a combined preparation for simultaneous, separate or sequential use, in the prevention and/or treatment of cancer.

25. A product containing at least one oligoribonucleotide as claimed in any one of claims 1 to 10, one precursor as claimed in claim 11 or one expression vector as claimed in claim 13 or claim 14 and an antiviral active ingredient, as a combined preparation for simultaneous, separate or sequential use, in the prevention and/or treatment of viral diseases.

26. The use of an oligoribonucleotide as claimed in any one of claims 1 to 10, of a precursor as claimed in claim 11, of an expression vector as claimed in claim 13 or claim 14, of eukaryotic or prokaryotic cells as claimed in claim 15 or of a transgenic nonhuman animal as claimed in claim 16, for screening for molecules capable of modulating the activity of the $\alpha$, $\alpha'$ or $\beta$ subunits of the CK2 protein kinase.